Squelch Add-On

for VHF Airband Receiver

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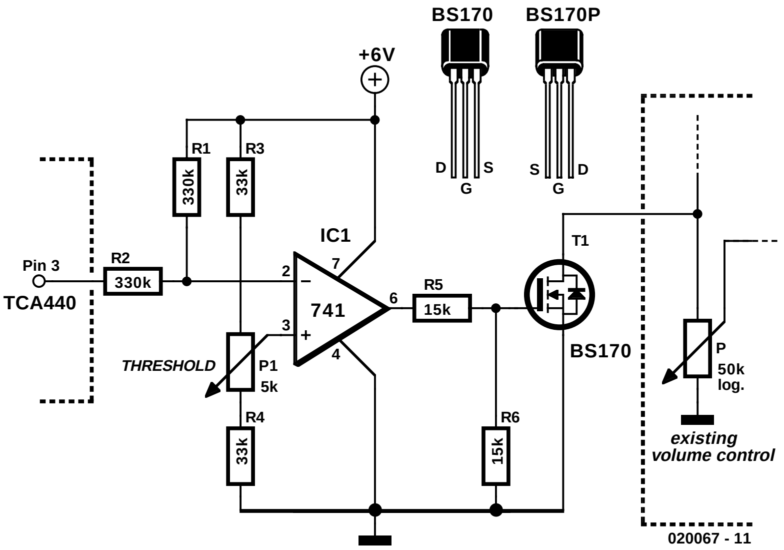
Recent feedback from our readers indicated that the VHF Airband Receiver described in our March 2002 issue has received a warm welcome. However, some of you have expressed some concern about the absence of noise suppression under no-signal conditions. Well, here is the circuit you need.

Silence, please!

Squelch is a system used to prevent weak, unintelligible signals and random noise (produced by the demodulator and receiver RF and IF amplifiers) from being heard by a radio operator while still allowing intelligible signals to be heard normally. This is accomplished by the use of an adjustable threshold below which any received signals are ignored. Only signals whose strength is above the squelch level are allowed to reach the receiver's audio circuitry, with the result that only satisfactory signals are received, and that no annoying hiss is heard when no signal is being picked up.

The word 'squelch' literally means 'to silence' but there is also an obvious link to the second meaning of the verb, i.e., 'make a sucking sound as of treading in thick mud'. You will understand the second meaning once you've heard the so-called squelch trailer, which is short burst of receiver noise that's produced just before a squelch circuit closes. This trailer is more conspicuous with FM than AM receivers because of the higher output noise level produced by the demodulator.



How it works

The circuit shown here is an optional extension to the VHF Airband Receiver. All signals and supply voltages are taken from the receiver.

Opamp IC1 acts as a simple comparator whose output remains high as long as the AGC level measured at pin 3 of the TCA440 (in the receiver) is below a certain threshold set with pot P1. FET T1 then effectively short-circuits the audio signal to ground and we hear nothing.

When the AGC level exceeds the threshold (indicating reception of an intelligible signal), the '741 output drops low and the audio signal is allowed to reach the volume pot in the receiver.

The +6 V supply voltage for the squelch add-on is obtained from the receiver. The connection between the drain of the BS170 and the 'top' of the volume pot should be made in screened cable.

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